高速铁路智能调度集中控制系统运行风险评估研究

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【摘要】 高速铁路智能调度集中控制系统在运行中存在着诸多风险因素，为了保障系统的安全，降低运行风险，本文提出了一种基于区间直觉模糊集的风险评估方法，该方法从“人-机-环-管”4个维度来分析系统运行风险因素和构建评估指标。考虑到风险指标的模糊性和不确定性，作者采用区间直觉模糊集来对风险指标进行表征，并利用区间直觉模糊集的模糊熵法来计算指标权重。在此基础上，通过加权算术平均算子对指标的评估值进行加权运算，得到高速铁路智能调度集中控制系统运行风险评估值，通过与风险等级对比，最终得出系统运行风险评估结果。结果表明：系统运行风险结果为“风险可允许”，这与现场调研的结果也相似，说明该风险评估方法具有一定的适用性。

【关键词】 高速铁路；智能调度；集中控制；区间直觉模糊集；风险评估

Research on Operation Risk Assessment of High-Speed Railway Intelligent Dispatching Centralized Traffic Control System

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Abstract: There are many risk factors in the operation of the high-speed railway intelligent dispatching centralized control system. In order to ensure the safety of the system and reduce the operation risk, this paper proposes a risk assessment method based on interval intuition fuzzy sets. -Manage"4 dimensions to analyze system operation risk factors and build evaluation indicators. Considering the fuzziness and uncertainty of risk indicators, interval intuitionistic fuzzy sets are used to characterize risk indicators, and the fuzzy entropy method of interval intuitionistic fuzzy sets is used to calculate the weight of indicators. The evaluation value of the index is weighted to obtain the operation risk evaluation value of the high-speed railway intelligent dispatching central-

ized control system. By comparing with the risk level, the system operation risk evaluation result is finally obtained. The results show that the system operation risk result is "risk allowable", which is similar to the results of the on-site investigation, indicating that the risk assessment method has certain applicability.

Key words: high-speed railway; intelligent dispatching; centralized traffic control; interval valued intuitionistic fuzzy sets; risk assessment